



Coping with an Attack

A QUICK GUIDE TO DEALING WITH BIOLOGICAL, CHEMICAL, AND “DIRTY BOMB” ATTACKS

Prepared by Patricia Coomber, PhD (LtCol, USAF) and Robert Armstrong, PhD (COL, USAR) at the Center for Technology and National Security Policy, National Defense University, Fort McNair, Washington DC (<http://www.ndu.edu/ctnsp/index.html>) [This document may be reproduced locally]

BIOLOGICAL ATTACK

PRE-ATTACK

- Stockpile 3 days of non-perishable food
- Stockpile 3 days of water (3 gallons for each person)
- Develop family contact plan (how to get in touch via phone, internet, or other method)
- Stockpiling antibiotics is NOT recommended
- Purchasing a gas mask is NOT recommended

POST-ATTACK

- If possible, remain at home
- You have time --- treatment does not have to start immediately
- Listen to local news
- If needed, you will be told where to obtain treatment
- Do NOT immediately rush to the Emergency Room

CHEMICAL ATTACK

PRE-ATTACK

- Stockpile 3 days of non-perishable food
- Stockpile 3 days of water (3 gallons for each person)
- Develop family contact plan (how to get in touch via phone, internet, or other method)
- Purchasing a gas mask is NOT recommended

POST-ATTACK

- IMMEDIATELY leave the chemical attack area
- IMMEDIATELY remove contaminated clothing and shower or flush with water if you were exposed
- Avoid puddles of liquid
- Chemical clouds blow away quickly
- Do NOT immediately rush to the Emergency Room unless you have breathed in chemical fumes, or have contamination on your skin

“DIRTY BOMB” ATTACK

PRE-ATTACK

- Stockpile 3 days of non-perishable food
- Stockpile 3 days of water (3 gallons for each person)
- Develop family contact plan (how to get in touch via phone, internet, or other method)
- Stockpiling antibiotics is NOT recommended
- Purchasing potassium iodide tablets, a Geiger Counter, or a gas mask is NOT recommended

POST-ATTACK

- You have time --- the amount of radiation from a “dirty bomb” is unlikely to give you radiation sickness or cancer
- Follow instructions of emergency personnel
- Leave the area by foot; do NOT use public transportation
- Do NOT lick or touch your lips, eat, drink, or smoke until experts have decontaminated you
- Do NOT immediately rush to the Emergency Room

Biological Attack

Threat	Immediate Action	Symptoms	Treatment (if exposed)	Contagious ?
Smallpox (Viral infection) Enters the body by being breathed in	<ul style="list-style-type: none">- Stay at home; tune to radio or television for instructions- DO NOT go to an emergency room unless you are sick- Smallpox is contagious, health officials may advise wearing a face mask when you go out- Infected persons should be isolated- After smallpox exposure, victim has a few days to get the vaccine (see treatment/prevention column)	<ul style="list-style-type: none">- Rash appears 2-3 days after infection- Within 1-3 days after rash appears, the rash becomes raised bumps and pus-filled blisters- Blisters crust, scab, and fall off after about 3 weeks, leaving a pitted scar- Victim is infectious until all scabs fall off	<ul style="list-style-type: none">- Before exposure, smallpox vaccine can prevent the disease- After exposure, vaccination within 3 days will completely prevent or significantly modify effects of disease in most people- Vaccination 4-7 days after exposure may modify severity of disease- Persons treating smallpox victims should be vaccinated, and wear gloves, gowns, and masks- Insure that clothing, towels, bed sheets, etc. are not used by uninfected persons- Bleach will kill the virus on surfaces. Do NOT drink bleach or use on skin.	YES
Anthrax (Bacterial infection) Enters the body thru: <ul style="list-style-type: none">- cuts in the skin (cutaneous form)- being breathed in (inhalation form)- the mouth (ingested form—for example, on contaminated food)	<ul style="list-style-type: none">- Stay at home; tune to radio or television for instructions- DO NOT go to an emergency room unless you are sick- Antibiotics for anthrax are effective in the first 1-6 days- Antibiotics must be prescribed/administered by medical personnel	<ul style="list-style-type: none">- Symptoms usually occur within 7 days- Skin anthrax starts with bump like an insect bite; in 1-2 days becomes a swelling, then painless open sore- Anthrax breathed into the body (inhalation anthrax) has flu-like symptoms- Ingested anthrax has symptoms like food poisoning	<ul style="list-style-type: none">- Antibiotics are effective if started within 1-6 days after infection- Vaccination may also be recommended in some cases- Anthrax is not contagious- Bleach can kill the bacteria on surfaces. Do NOT drink bleach or use on skin.	NO
Plague (Bacterial infection) Enters the body thru: <ul style="list-style-type: none">- being breathed in (inhalation form)- bites from fleas from infected rodents	<ul style="list-style-type: none">- Stay at home; tune to radio or television for instructions- DO NOT go to an emergency room unless you are sick- Begin prescribed antibiotics as soon as possible- Infected persons should be isolated- Inhalation form of plague is contagious – persons with a cough or sneezing should be considered infectious- Health officials may ask you to wear a mask over your nose and mouth when you go out	<ul style="list-style-type: none">-Symptoms occur within 1-6 days after exposure- High fever, painful/swollen lymph nodes (armpits and neck), cough, and difficult breathing	<ul style="list-style-type: none">- Rapid use of antibiotics is effective- Infected persons should be isolated- Heat, sunlight, bleach will kill the plague bacteria on surfaces. Do NOT drink bleach or use directly on skin.- Masks should be worn at all times when dealing with infected persons	YES
Tularemia (Bacterial infection) Enters the body thru: <ul style="list-style-type: none">- tick bite- being breathed in (inhalation form)- the mouth (ingested form from contaminated food)	<ul style="list-style-type: none">- Stay at home; tune to radio or television for instructions- DO NOT go to an emergency room unless you are sick- Victim has 3-5 days to start antibiotics- Antibiotics must be prescribed/administered by medical personnel- Even without antibiotics death is <u>unlikely</u>	<ul style="list-style-type: none">- Fever, chills, headache, weakness occur in 3-5 days- Eye infections will occur first in most cases	<ul style="list-style-type: none">- Antibiotics are very effective and should be started within 3-5 days of infection- Standard disinfectants and mild heat will kill the organism	NO
Botulism (Bacteria which produces a poison called toxin) <ul style="list-style-type: none">- The toxin cannot penetrate intact skin, it enters the body thru:- cuts in the skin (cutaneous form)- being breathed in (inhalation form)- the mouth (ingested form from contaminated food)	<ul style="list-style-type: none">- Stay at home; tune to radio or television for instructions- DO NOT go to an emergency room unless you are sick- If you have been exposed, obtain antitoxin treatment from medical staff as soon as possible	<ul style="list-style-type: none">- Blurred vision and difficulty swallowing or speaking occur within 2-3 days	<ul style="list-style-type: none">- Medical authorities must administer antitoxin- Treatment requires hospitalization- Soap and water and bleach will inactivate toxin. Do NOT drink bleach or use on skin.	NO
Hemorrhagic Fevers (Viral infection) <ul style="list-style-type: none">- Infection spreads thru body fluids (blood, urine, stool, saliva) from infected persons	<ul style="list-style-type: none">- Stay at home; tune to radio or television for instructions- DO NOT go to an emergency room unless you are sick- If infected, seek immediate medical care	<ul style="list-style-type: none">- Fever, muscle aches, diarrhea begins within 3-5 days of infection	<ul style="list-style-type: none">- Medical personnel will administer antiviral drugs- Some hemorrhagic fevers respond to antiviral drugs- Infected persons should be quarantined- Bleach will kill the organisms on surfaces. Do NOT drink bleach or use on skin.	YES
Ricin (Poison, called toxin, from castor beans) Enters the body thru: <ul style="list-style-type: none">- cuts in the skin (cutaneous form)- being breathed in (inhalation form)- the mouth (ingested form from contaminated food)	<ul style="list-style-type: none">- Stay at home; tune to radio or television for instructions- DO NOT go to an emergency room unless you are sick- There is no vaccine or antitoxin available	<ul style="list-style-type: none">- Fever, tight chest, cough and respiratory problems occur within a few hours if ricin is breathed in- If taken in by mouth (ingested form) can cause intestinal bleeding and damage to kidneys and liver	<ul style="list-style-type: none">- No vaccine or antitoxin is available, patients given supportive care- The toxin is inactivated by bleach or soap and water. Do NOT drink bleach or use on skin.	NO

FAQs for Biological Attack

What should I do to protect my family and myself if a biological agent were released in my community? Emergency management teams will let you know if you need to evacuate the area. Self-isolation will protect you and your family from contagious diseases. Most agents are destroyed by bleach, or in some cases soap and water. Do NOT drink bleach or use on skin.

What should I do if I'm in a building during a biological attack? Stay in your area so that you do not kick up dust. Cover your mouth with a handkerchief or clothing. If a letter or package is the source of the biological material, close the doors and windows of the room where the source is located and turn off air conditioning, heating and fans. Shout only as a last resort--shouting can cause you to inhale dangerous amounts of dust.

Is there a way to distinguish between anthrax and a cold or flu? A runny nose is a rare symptom of anthrax. A person who has a runny nose along with other common flu-like symptoms is far more likely to have the common cold or flu than to have anthrax. Flu-like symptoms outside of the 'flu-season' should trigger medical attention.

If smallpox is released in a cloud (aerosol) form, how long does the virus survive? The smallpox virus is fragile. In lab experiments, when smallpox is put into a cloud form, 90% of the smallpox virus dies within 24 hours; in the presence of sunlight, this percentage is even greater.

Is smallpox contagious before the symptoms show? A person with smallpox is sometimes contagious with onset of fever, but the person becomes most contagious with the onset of rash. The infected person spreads the disease into the air with his breath and from the scabs. Infected persons are contagious until the last smallpox scab falls off.

If someone is exposed to smallpox, is it too late to get a vaccination? Vaccination within 3 days of exposure will completely prevent or significantly reduce the severity of the disease in the vast majority of people. Vaccination 4 to 7 days after exposure likely offers some protection from disease or may modify the severity of disease.

Should I keep a stockpile of antibiotics? No. There is no single pill that can protect against all types of biological agents, and antibiotics have a limited "shelf life" before they lose their strength. Also, antibiotics can cause side effects, and unless you store and take the drug properly, it may not work or may cause you to become ill. For most bacterial agents, the antibiotic regime must be specific for the agent and prescribed by medical personnel.

Is it safe to drink water from the tap? It would be extremely difficult for a terrorist to contaminate our drinking water supplies to cause widespread illness. Anything deliberately put into the water supply would be greatly diluted, and water treatment facilities routinely filter the water supply and add chlorine in order to kill harmful germs. However, citizens can protect themselves by boiling their drinking water, which will kill any microorganisms that may have survived the municipal filtration systems.

How can I recognize a bioterrorism hoax? If you are not sure whether a bioterrorism report is true or not, check with credible sources, such as CDC's Health-Related Hoaxes and Rumors Web site at http://www.cdc.gov/hoax_rumors.htm. A number of Internet sites are available regarding urban legends and hoaxes, such as the Urban Legend Reference Page at <http://www.snopes2.com> and the Computer Incident Advisory Committee, and Department of Energy's HoaxBusters site at <http://hoaxbusters.ciac.org>. You can also get more information from Centers for Disease Control and Prevention Public Response Hotline (CDC):

- English (888) 246-2675
- Español (888) 246-2857
- TTY (866) 874-2646

Should I purchase disposable masks as part of a home emergency disaster kit? Having disposable masks in a home emergency disaster kit is not a bad idea, but they are not absolutely necessary. In an emergency, you can get the same amount of protection by placing an article of clothing—a shirt or blouse, or a handkerchief—over your mouth and nose. It will likely be several days before we recognize that a biological weapon has been used against us. In some cases, even several days after an attack, medical authorities may want you to wear a simple paper mask when you go outside, so having them on-hand would be convenient. (Listen to the radio and television for instructions.) Paper masks offer little, if any, protection against chemical weapons, though. In an emergency, simply covering your mouth and nose with clothing—until you are out of the danger area—is a better idea. (Remove the covering and breathe fresh air, once you are out of the chemical cloud.) In any situation where there is a lot of dust and debris—for example, following any type of explosion—it is a good idea to cover your mouth and nose, to prevent your lungs from being damaged.

Chemical Attack

Threat	Immediate Action	Symptoms	Treatment (if exposed)	Contagious?
Nerve Agents (VX, Sarin, Tabun) - Can be liquid or gas Enters the body thru: - skin and eyes - breathing in (inhalation) - the mouth (ingested form from contaminated food)	<ul style="list-style-type: none">- Immediate actions for all chemical agents are very similar- If you are exposed, the effects will be fairly rapid- People around you may begin fainting, vomiting and have difficulty breathing- Birds and insects may die quickly and fall from the sky- IMMEDIATELY leave the area- Avoid puddles of liquid- If the attack was outside, you should get inside a building or a car- If the attack was inside, get to the outside- If you were directly exposed, remove clothing (place in plastic bags, if possible)- Removing contaminated clothing is more important than modesty- Do not remove contaminated clothing over your head; cut or tear it off to avoid contact with the eyes, nose, and mouth- Thoroughly flush all areas where agent contacted your skin using nearest water available- Hazmat/fire crews are trained for immediate response and medical treatment is available at most hospitals	<ul style="list-style-type: none">- First, pupils of the eyes shrink to pinpoints and victim begins sweating and twitching- Then, victim experiences runny nose, watery eyes, drooling, excessive sweating, difficult breathing, dimness of vision, nausea, vomiting	<ul style="list-style-type: none">- Remove clothing and flush eyes and skin with plenty of water- Seek medical attention immediately; there are antidotes for specific chemical agents- Atropine, a drug normally used in hospitals to treat cardiac arrest, is an effective nerve gas antidote, but should be administered only by qualified personnel	NO
Sulfur Mustards - Generally thick liquid, yellow or brown in color, with a slight garlic or mustard odor Enters the body thru: - skin and eyes - breathing in (inhalation) - the mouth (ingested form from contaminated food)		<ul style="list-style-type: none">- Mustard gas is a blistering agent, burning eyes and skin exposed to it and lungs, mouth and throat if it is breathed in (inhaled)- Symptoms are not usually noticed until 1-6 hours after exposure	<ul style="list-style-type: none">- Remove clothing and flush the eyes and skin with plenty of water- Seek medical attention immediately; there are antidotes for specific chemical agents	NO
Hydrogen Cyanide - Hydrogen cyanide is an extremely flammable, colorless gas or liquid Enters the body thru: - skin and eyes - breathing in (inhalation) - the mouth (ingested form from contaminated food)		<ul style="list-style-type: none">- Symptoms include burning and redness of the skin and eyes- Breathing in hydrogen cyanide (inhalation) causes confusion, drowsiness, shortness of breath, leading to collapse	<ul style="list-style-type: none">- Get fresh air immediately- Flush skin or eyes with plenty of water- Seek medical attention immediately; there are antidotes for specific chemical agents	NO
Chlorine - Chlorine is a greenish-yellow gas with stinging odor - Heavier than air, so it will settle in low spots Enters the body thru: - skin and eyes - breathing in (inhalation) - the mouth (ingested form from contaminated food)		<ul style="list-style-type: none">- Chlorine is very harmful to the eyes and skin and can cause tearing, blurred vision, difficulty breathing, and burns	<ul style="list-style-type: none">- Get fresh air immediately- Flush skin or eyes with plenty of water- Seek medical attention immediately; there are antidotes for specific chemical agents	NO

FAQs for Chemical Attack

Should I purchase a gas mask as protection? No. A mask would only protect you if you were wearing it when a chemical (or biological) attack occurs. A release of a chemical (or biological) agent is most likely to be done without anyone knowing it, so you would not know ahead of time to put on your mask. Wearing a mask continuously or "just in case" an attack occurs, is impractical, if not impossible. Masks that are not properly fitted will NOT give you adequate protection. For example, it is difficult to obtain a proper seal with the mask if you have facial hair such as a beard or long sideburns. Protective masks do not fit small children. There are reports of accidental suffocation when people have worn masks incorrectly, as happened to some Israeli civilians during the Persian Gulf War.

Should I keep a stockpile of water? You can live only a few days without water, so it is very important that you create an emergency supply of safe water. One gallon of safe water per person per day is the bare minimum for survival. Most surplus stores can sell you inexpensive, 50-gallon plastic drums. Properly chlorinated tap water can be safely stored for up to three months. Water purification tablets are also readily available from many surplus and camping supply stores.

What are the signs of a chemical attack? Many chemical agents cannot be seen or smelled. Observe the following rule of thumb: If a single person is on the ground, choking or seizing, this individual is probably having a heart attack or some type of seizure. However, if several people are down, coughing, vomiting, or seizing, they could be reacting to the presence of a toxic substance. Leave the area immediately, call 911, and tell the dispatcher a hazardous gas may be present.

What should I do during a chemical attack?

If the attack occurs indoors:

Exit the building immediately. Avoid puddles of liquid. Once outside, if you were directly exposed to a toxic substance, discarding your modesty and shedding your clothes could save your life. Taking off your outer clothing can remove roughly 80 percent of the contamination hazard. Look for a nearby fountain, pool, or other source of water to quickly and thoroughly rinse any skin that may have been exposed (e.g., jump in a pool). Water alone is an effective decontaminant. Try to remain calm. Rescuers will give medical attention to the most seriously injured individuals first.

If the attack occurs outdoors:

Birds and other small animals would very quickly be overcome by a poison gas, so if birds and insects are dropping from the sky, this is an indication of a possible chemical attack. The most important thing to do is to get a physical barrier between you and the toxic cloud. Get indoors quickly--into a building or a car. Shut all windows and doors and turn off the air conditioner or heater. Plug any air drafts (e.g., under doors). Call 911 and notify authorities that a hazardous gas may be present. The wind will carry the toxic hazard away within a relatively short period of time. Stay indoors, and turn on the television or radio for news. Authorities will notify you when it is safe to go outside. If you are at home, put your clothes in a plastic bag and take a shower to remove any contamination to which you may have been exposed.

“Dirty Bomb” Attack

Threat	Immediate Action	Symptoms	Treatment (if exposed)	Contagious?
“Dirty Bomb”	<p>AT THE BLAST SITE</p> <ul style="list-style-type: none">- Follow instructions of the emergency personnel- Stay calm—you have time—decontamination does not need to begin immediately- REMAIN in the area until released by emergency personnel- Cover your mouth and nose with a handkerchief <p>NEAR THE BLAST SITE</p> <ul style="list-style-type: none">- Stay calm—you have time—decontamination does not need to begin immediately- Cover your mouth and nose with a handkerchief or other material- Proceed on foot away from the area- Do not take public transport, so you do not contaminate buses, subways, railcars, etc.- If you drive your car or truck, do not use the air conditioner or heater- At home, remove clothing OUTSIDE and place in plastic bag- Shower twice, wash all hair thoroughly- News broadcasts will instruct you on how to discard contaminated clothing and how to clean your car or truck	<ul style="list-style-type: none">- Symptoms depend on amount of radiation received- Radiation doses are referred to as the number of “rem,” just like temperature is referred to as the number of degrees- A chest x-ray is about 1/100th rem- An exposure of 5 – 75 rem produces few observable symptoms- An exposure of 75 – 200 rem causes vomiting, fatigue and appetite loss—recovery takes a few weeks- An exposure of more than 300 rem causes bleeding and changes in blood cells- An exposure of more than 600 rem causes hair loss and an inability to fight infections—it is usually fatal	<ul style="list-style-type: none">- Treatments are available for some types of radiation exposure- Wash any open wound several times with soap and water- Antinausea drugs and painkillers can relieve some symptoms- Antibiotics can fight secondary infections- Blood transfusions may be needed	NO

FAQs for “Dirty Bomb” Attack

What is a “dirty bomb?” A “dirty bomb” is a conventional explosive such as dynamite packaged with radioactive material that scatters when the bomb goes off. (The radioactive material would likely be material stolen from hospitals, nuclear power plants, or other industrial sites. It is not the same as an atomic bomb.) Most “dirty bomb” casualties will be from the initial blast of the conventional explosive. The radioactive material that is scattered as a result of the explosion causes the “dirty” part. The TNT in such a bomb may still be more dangerous than the radioactive material. Its destructive power would depend on the size of the conventional bomb, and the amount of the nuclear material used.

What is Radiation? Radiation is a form of energy that is present all around us. Different types of radiation exist, some of which have more energy than others, and some of which cause more harm to people than others. The dose of radiation that a person receives is measured in units called rem. For example the average person gets about 1/3 of a rem from natural exposure during a year, and approximately 1/100th of a rem from one chest x-ray. Radiation comes from man-made sources such as x-ray machines, from the sun and outer space, and from some radioactive materials such as uranium in soil.

Will a “dirty bomb” make me sick? The effects of a “dirty bomb” can vary, depending on what type of radioactive material is used and on how much material is scattered. Although a “dirty bomb” could cause serious injuries from the explosion, it most likely would not have enough radioactive material in a form that would cause serious radiation sickness among large numbers of people. Just because people are near a radioactive source for a short time or get a small amount of radioactive material on them does not mean that they will get radiation sickness or cancer.

However, radioactive material is much more dangerous if it gets inside your body by eating or drinking, breathing, or through an open wound than if it remains outside. If you come into contact with radioactive material from a “dirty bomb,” take the following precautions: Do **not** eat, drink, or smoke, do not lick your lips, and do not touch your hand to your face or to an open wound until you have left the contaminated area and have been properly decontaminated by experts.

What Types of Terrorist Events Might Involve Radiation? Types of terrorist events could include introducing radioactive material into food or water supply (powdered or liquid radioactive material can be spread without using explosives), using explosives (like dynamite) to scatter radioactive materials (called a “dirty bomb”), bombing or destroying a nuclear facility, or exploding a small nuclear device. Although introducing radioactive material into the food or water supply would cause great concern, it probably would not cause much contamination or increase the danger of adverse health effects.

What are the signs of a radiation attack? There will be signs of an explosion, but you cannot see or smell radiation.

How fast do I have to leave the area? For the most likely “dirty bomb,” anyone who survives the explosion will actually have hours to evacuate. There is no need for panic. It takes hours to accumulate enough radiation from a “dirty bomb” to cause you to get radiation sickness or develop cancer.

How can I protect myself during a radiation emergency? If you are advised to stay at home or office, you should do the following: Close all doors and windows, Turn off ventilators, air conditioners, and forced-air heating units that bring in fresh air from the outside. Only use units to re-circulate air that is already in the building, close fireplace dampers, move to an inner room, keep your radio tuned to the emergency response network. If you are advised to evacuate: follow the directions from your local officials, and if immediately available, take a flashlight, portable radio, batteries, essential medicines, and cash and credit cards.

You recommend NOT using public transportation when evacuating from a “dirty bomb” attack, but what about using my private vehicle? If you drive your car or truck, some radiation material may get inside and will have to be cleaned out. Listen to local news broadcasts for instructions about cleaning your vehicle. If you drive your private vehicle, do not run the heater or air conditioner. When you get home, remove your clothing OUTSIDE and place it in plastic bags. Listen to local news broadcasts for instructions on how to discard these contaminated clothes.

I was a mile from the detonation --- am I going to be sick? Listen to emergency broadcast information for instructions that will depend on the size of the attack, direction of the wind, and components of the “dirty bomb.” It is extremely unlikely that anyone who survives the blast will become sick from radiation. In addition, your ability to have children will not be affected.

Will I be able to decontaminate my home and continue to live in it during and after the attack? Yes. Decontamination is difficult but possible, and with reasonable effort and care you should be able to return to a normal safe life in your home.

Should I buy a radiation detector? No. Unless you have been trained you won’t be able to interpret the readings. Many of the Geiger counters available commercially are worthless or uncalibrated.

Should I purchase potassium iodide tablets for protection against radiation? No. Potassium iodide (KI) (available over-the-counter) protects people from thyroid cancer caused by radioactive iodine, a cancer-causing agent that can be released in nuclear explosions. KI should only be taken in a radiation emergency that involves the release of radioactive iodine, and only radioactive iodine, such as an accident at a nuclear power plant or the explosion of a nuclear bomb. A “dirty bomb” will not contain radioactive iodine, so KI pills are of no use for a “dirty bomb”.